A Telemedicine System Using B-ISDN

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We developed a telemedicine system running on B-ISDN for patients' data retrieval and image data communication between long distance hospitals.

Network Architecture

Telemedicine applications are developed to be run on the B-ISDN. The legacy network is also considered science users access this network until the B-ISDN service becomes popular (Fig 1). It is made possible by running application software on top of the TCP/IP protocols and using the ATM protocol as a subnetwork access protocol [1].

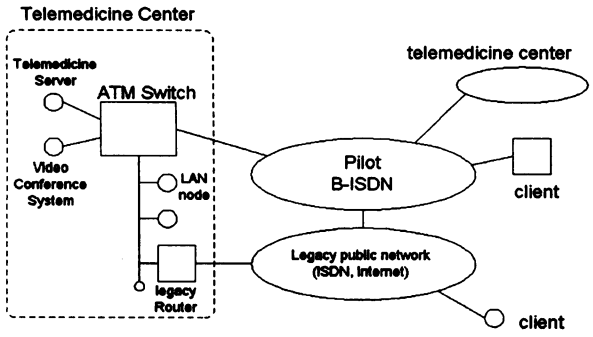

Fig 1. Telemedicine network

Multimedia Medical Database

Unlike previous telemedicine systems using file type data, we have chosen to integrate the database interface [2]. By doing so, the users see the same interface and access the database at all times.

For DB retrieval efficiency, we use indices for object identifiers and primary keys of each object type. We also utilize local caching for conference materials that can be prepared beforehand. A Master/Slave architecture has been chosen since it simplifies the management of the presentation control (Fig 2). The Master PC has control over all activities (mouse, keyboard) governing the conference. The Slave PC follows the steps taken by the Master PC. Annotations are sent both ways. In a conference, all answers requested to the server are sent to both the Master and Slave. Convenience for doctors is achieved via similar layout to the conventional devices. Since they have been accustomed to the conventional systems, they feel comfortable for the similar layout to the conventional devices. For doctors who are not familiar using computers, all basic commands are shown as either control panels or menu bars. For example, x-ray films can be zoomed in/out using a separate control panel.

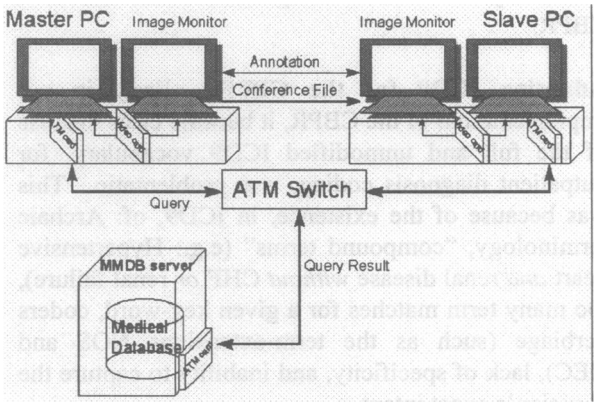

Fig 2. Architecture of telemedicine system

Results

The telemedicine system is a kind of clinical meeting by medical doctors. Actual clinical manifestations, laboratory findings, courses of illness, and responses to certain treatment are presented in this meeting. Attendants even in remote hospitals can join in active discussion about clinical presentations.

References

1. B. Ellington(editor), LAN emulation over ATM: Version 1.0 specification. ATMF/94-0035R9, January 1995.
2. C. Batini and et al. Conceptual Database Design: An Entity-Relationship Approach. Benjamin Cummings, 1992.

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